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PUBLIC SEWAGE TREATMENT PLANT CONSTRUCTION - 1952

Carl E. Schwob

Public Health Service
Washington, D. C.

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PUBLIC HEALTH SERVICE
Division of Water Pollution Control

Carl E. Schwob, Chief

Washington: 1953

PUBLIC SEWAGE TREATMENT PLANT CONSTRUCTION - 1952

"Water pollution," said the 80th Congress, "has become a matter of grave concern in many areas, and its damaging effects on the public health and natural resources are a matter of definite Federal concern as a menace to the national welfare. Abatement must be undertaken in order to control it."

This report deals with the progress that the cities and towns of the Nation have made during the year 1952 in constructing sewage treatment plants, the means by which pollution from cities is kept under control.

Authority for the Report

It is the objective of the Federal Water Pollution Control Act of 1948 to aid in accelerating abatement action. The Act recognizes, preserves and protects the primary responsibilities and rights of the States in controlling water pollution. It limits the Federal government's responsibilities to the cooperative development, with the States, municipalities, industries and others, of comprehensive programs for eliminating or reducing pollution, and to research, technical assistance and encouragement of cooperative activity between the States on problems of pollution that are interstate in character. It also provides for enforcement of interstate pollution, but only when the efforts of the State have not been successful in effecting a solution to the problem.

The Surgeon General has authority under the Act to "prepare and publish, from time to time, reports of such surveys, studies, investigations, research and experiments made under the authority of this Act as he may consider desirable, together with appropriate recommendations with regard to the control of water pollution" and to "collect and disseminate information relating to water pollution and the prevention and abatement thereof."

Local Action Needed to Stop Pollution

Municipal wastes, consisting as they do of toilet flushings, bath and laundry water, ground garbage, restaurant washings and hospital refuse, and the wastes from industry including oils, acids, chemicals, greases, salts, metals and animal and vegetable material, continue to injure the Nation's welfare. Pollution threatens the health of our people and the vitality of our industry, damages water for agriculture, and kills fish and wildlife.

Under the American tradition of community responsibility, municipalities and industries creating waste must provide the needed pollution abatement facilities. These facilities protect the sources of the Nation's water supplies, its fish and wildlife, and its recreation areas. They also protect for industry its most important raw material, water, from the spoiling effects of sewage and industrial wastes.

Sewage Treatment Construction - 1952

Contracts amounting to $137 million for 515 sewage treatment plants, including interceptor sewers, were awarded by the Nation's municipalities* during the year. The cost of 314 new plants was $78,419,556. The remaining $58,789,133 provided for additions, enlargements or replacements to 201 existing plants.

Table 1 shows the number and type of construction projects for which contracts were awarded in 1952, in each of the Nation's 15 major drainage basin areas.

1952 Construction Record Compared to Over-all Needs

The adequacy of the Nation's pollution control effort during 1952 can be measured by comparing this expenditure with the amount of work necessary to bring pollution under reasonable control. As of July, 1950, a nation-wide survey by State water pollution control agencies and the Public Health Service indicated that more than 6,500 new or improved sewage treatment plants were needed. In order to care for these known requirements, plus municipal needs not specifically known at the time of the survey and new needs arising during the next ten years, it was estimated that annual expenditures by municipalities of between $450 million and $500 million would be required.

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* Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns; significant institutions, resorts, recreational centers, or other population centers, and industries discharging sanitary sewage wastes directly to watercourse.

TABLE I

SEWAGE TREATMENT PLANT CONSTRUCTION - CONTRACT AWARDS 1952

BY DRAINAGE BASIN & TYPE OF CONSTRUCTION*

DRAINAGE BASIN	TOTAL		NEW PLANTS		ADDITIONS, ENLARGEMENTS, REPLACEMENTS, ETC.	
	NO.	COST ($)	NO.	COST ($)	NO.	COST ($)
United States	515	137,208,689	314	78,419,556	201	58,789,133
Northeast	29	15,638,922	13	3,735,534	16	11,903,388
North Atlantic	69	34,450,283	37	21,263,757	32	13,186,526
Southeast	39	10,703,659	30	7,358,366	9	3,345,293
Tennessee	3	1,042,965	2	684,000	1	358,965
Ohio	47	21,905,081	27	11,676,708	20	10,228,373
Lake Erie	6	3,520,946	3	1,229,125	3	2,291,821
Western Great Lakes	34	6,758,387	20	4,374,865	14	2,383,522
Upper Miss.	60	9,517,712	35	3,955,836	25	5,561,876
Missouri	41	5,345,617	31	3,850,379	10	1,495,238
Southwest-Lower Mississippi	50	6,102,870	36	4,438,757	14	1,664,113
Western Gulf	42	3,577,948	22	2,217,243	20	1,360,705
Colorado	5	161,991	4	71,991	1	90,000
Great Basin	4	364,322	3	314,995	1	49,327
California	52	13,121,539	26	9,044,588	26	4,076,951
Pacific Northwest	34	4,996,447	25	4,203,412	9	793,035

* Contracts are for sewage treatment plant and/or interceptor sewer construction.

1952 Construction Record Compared to Years 1948-1951

Table II shows the national annual expenditure for construction of sewage treatment works and intercepting sewers as represented by contracts awarded. These expenditures are given in terms of actual dollars, as well as on the basis of common 1950 dollar values. From 1948 to 1950 there was a steady rise in the annual volume (actual dollars) of contracts awarded. From the peak of $203 million in 1950, awards have decreased to $137 million during 1952.

TABLE II*

SEWAGE TREATMENT PLANT CONSTRUCTION CONTRACT AWARDS**

1948-1952

YEAR	CONTRACT AWARD VALUE	
	CURRENT DOLLARS (Millions)	1950 DOLLARS*** (Millions)
1915-1950 ave.		141
1948	158	175
1949	180	194
1950	203	203
1951	177	168
1952	137	123

* Based on records maintained by U. S. Department of Commerce, Facilities and Construction Bureau.

** Construction is for sewage treatment plants and interceptor sewers.

*** Engineering News Record Construction Cost Index used to translate current dollar value to 1950 dollars.

In terms of constant 1950 dollars, the long-term (1915-50) average annual construction volume for this work is estimated at $141 million. Table II provides a comparison between the long-term average and the construction volume for the years 1948 to 1952. When adjusted to 1950 dollars by the Engineering News-Record Construction Index, the $137 million spent during 1952 actually bought only $123 million worth of construction.

Analysis of 1952 Construction Record

Table III shows these data distributed according to population size and type of construction. Municipalities of less than 25,000 people accounted for 82 percent of all projects, but less than half (44.6 percent) of all money spent; 93 percent of all new plants, and 60 percent of money spent for new plants; 65 percent of projects covering additions, enlargements, or replacements, and 25 percent of the money spent for such projects.

TABLE III

SEWAGE TREATMENT PLANT CONSTRUCTION CONTRACT AWARDS IN 1952
BY POPULATION SIZE & TYPE OF CONSTRUCTION
(Costs in dollars)

POPULATION RANGE	TOTAL				NEW PLANTS				ADDITIONS, ENLARGEMENTS, REPLACEMENTS, ETC.			
	FOR RANGE		CUMULATIVE %		FOR RANGE		CUMULATIVE %		FOR RANGE		CUMULATIVE %	
	NO.	COST	NO.%	COST %	NO.	COST	NO.%	COST %	NO.	COST	NO.%	COST %
Less than 2,500	223	15,961,087	43.3	11.6	177	13,332,019	56.4	17.0	46	2,629,068	22.9	4.5
2,500-5,000	71	11,540,947	57.1	20.0	47	9,781,627	71.4	29.5	24	1,759,320	34.8	7.5
5,000-10,000	75	17,132,414	71.7	32.5	43	12,258,339	85.0	45.1	32	4,874,075	50.7	15.8
10,000-25,000	54	16,622,556	82.2	44.6	25	11,381,761	93.0	59.6	29	5,240,795	64.9	24.6
25,000-50,000	27	11,053,901	87.5	52.7	13	8,346,958	97.2	70.3	14	2,706,943	72.2	29.1
50,000-100,000	24	25,054,350	92.0	71.0	3	11,711,251	98.2	85.2	21	13,343,099	82.5	52.0
100,000-250,000	10	10,697,946	94.0	78.8	3	3,652,500	99.0	89.8	7	7,045,446	88.0	64.0
250,000-500,000	10	14,632,221	96.0	89.4	1	7,000,000	99.5	98.7	9	7,632,221	90.5	70.9
500,000-1,000,000	5	8,108,634	97.0	95.2	1[3]	250,000	99.7	99.1	4[4]	7,858,634	92.5	90.2
1,000,000 or over	16	6,404,633	100.0	100.0	1[1]	705,101	100.0	100.0	15[2]	5,699,532	100.0	100.0

1/ Philadelphia, Penna.- portion of Southwest Sewage Disposal Plant.

2/ Charles River (Mass.) interceptor ($1,990,000); Chicago, Ill., interceptor ($1,796,950); Chicago, Ill., additions to Northside Treatment Works ($102,700); Los Angeles, Cal., four contracts for interceptors ($236,912, $185,899, $182,531 and $268,517) and one contract for improvement to Hyperion Plant ($9,895); New York, N. Y., five contracts for additions or improvements ($31,118); Philadelphia, Penna., two contracts for interceptors ($875,010).

3/ Boston, Mass.- (Nut Island) portion of South Metropolitan Sewage Works ($250,000).

4/ Boston, Mass.- North Metropolitan Sewage Works interceptor ($6,200,000); Buffalo, N. Y., enlargement ($1,540,266); Houston, Texas, addition ($23,000); Washington, D. C., addition ($95,368).

The data indicate that new projects were being constructed predominantly by the smaller municipalities (93 percent of projects; 60 percent of money). However, only 65 percent of the contracts awarded for additions, enlargements or replacements were for communities below 25,000 in size, and these accounted for only 25 percent of the expenditures. The remaining 35 percent of the contracts, awarded by cities above 25,000, accounted for three-quarters (75 percent) of the money spent for this activity.

The factor of obsolescence due to wear, population or industrial growth, or a combination of these, is continuing to loom large as an element of current and future needs. Of the $137 million expended on a total of 515 projects, 42.8 percent of the total expenditures and 39.0 percent of the projects covered additions, enlargements or replacements to existing facilities.

U. S. Water Requirements to Support Population and Industrial Growth

On the average, year by year, the supply of water provided by Nature as rain or snow is constant. As the Nation grows in population and industry, this constant supply must be divided among more people and more industry. In order to meet our continuing need for water for human health as well as economic strength, there are two procedures which can be followed:

> The first is to store the great flood flows that occur at certain seasons of the year and release them at periods of low flow so as to better distribute our total yearly supply. The second procedure involves cleaning used water by putting it through sewage and industrial waste treatment works so that it can be re-used over and over again.

Pollution abatement is the key to water re-use.

The urgency of the water pollution problem has been given increased emphasis by recent forecasts regarding the Nation's future water requirements. The Report of the President's Materials Policy Commission, "Resources for Freedom," predicts that by 1975 this country's water requirements will be twice the amounts used in 1950 (Table IV). This estimate is based on expected population growth and industrial expansion during the next 25 years.

TABLE IV

UNITED STATES WATER USE, * 1950 AND 1975

USE	ESTIMATED WITHDRAWAL, 1950		ESTIMATED NEED, 1975		INCREASE 1950-75	
	Billion Gals. Per Day	% of Total	Billion Gals. Per Day	% of Total	Billion Gals. Per Day	% Increase
Total	185	100	350	100	165	90
Municipal and Rural**	17	9	25	7	8	50
Direct Industrial	80	43	215	62	135	170
Irrigation	88	48	110	31	22	25

* Source of data: "Resources for Freedom," Vol. I, p. 51.

** Roughly half of total volume of municipal water supplies is used industrially.

These increasing needs are already evident. Between 1900 and 1950 population doubled -- from 76 million to 151 million. Since 1950 it has further increased by about 7 million. In addition, people are using more water each year for new appliances in the home and for maintaining our higher standards of cleanliness. For example, the average annual increases in the output of dish washers and garbage grinders for the period 1947 to 1951 were 21 percent, and 35.3 percent respectively. The annual increase in output of washing machines averaged 7.5 percent for the period from 1940 to 1951.

The mobilization program currently under way calls for an increase of between 15 and 20 percent of the Nation's industrial capacity during the 1951-1954 period. An adequate supply of water for processing is one of the most critical elements in this planned expansion. The scheduled 20-million-ton increase in steel capacity, for example, will require an additional 1.3 trillion gallons of water annually, since about 65,000 gallons is needed to produce each ton of steel. Table V shows the growth of population and industry for the past and the projections for the future.

TABLE V

POPULATION AND INDUSTRY GROWTH IN UNITED STATES, 1900-1975

ITEM	YEAR			
	1900	1950	1952	1975
Population (Millions of People)	76	151	158**	200
Industry* (Total Industrial production index)	35	200	219	400***

* Values are Federal Reserve Board Indices of Industrial Production. 1935-1939 ave. = 100. 1900 value from National Bureau of Economic Research.

** As of December 31, 1952. Population includes U. S. armed forces overseas.

*** "Resources for Freedom," Vol. I, p. 6. (President's Materials Policy Commission).

1948-1952 Construction Record Compared to 1948-1952 Contract Awards for Other Municipal Construction and to Public Utility Construction

Construction of sewage treatment facilities to protect public health and conserve water for beneficial uses lags behind construction for other general municipal facilities and for the basic utility services (electricity, gas, water and sewers) that make it possible to maintain modern city life.

Table VI shows that there has been a steady upswing in the annual construction expenditures by cities, ranging from $1.2 billion in 1948 to $1.8 billion in 1952.

TABLE VI

CONTRACT AWARDS FOR MUNICIPAL CONSTRUCTION, 1948-51

(Millions of Dollars)

TYPE OF CONSTRUCTION	YEAR				
	1948	1949	1950	1951	1952
All Municipal Non-Residential Building*	1,223	1,388	1,581	1,755	1,795
Sewage Treatment Plants (including interceptor sewers)	158	180	203	177	137

* Does not include county spending for similar construction. County spending would increase amounts about 40%. Non-Residential Building includes schools, hospitals, municipally-owned utilities, highways, public buildings, prisons, etc.

Similarly, Table VII shows the steady increase in total expenditures for the basic utility services from $2.1 billion in 1948 to $3.2 billion in 1952. In our complex modern society, each part of which is largely dependent on other parts for proper functioning, there always exists the possibility of a breakdown when one important segment lags too far behind the others.

TABLE VII

NEW PUBLIC UTILITY CONSTRUCTION,* 1948-1951

(Millions of Dollars)

ITEM	YEAR				
	1948	1949	1950	1951	1952
Electricity	1,099	1,410	1,306	1,371	1,650
Gas	683	873	1,102	1,275	1,080
Water	235	265	282	286	282
Sewers (not including interceptors)	131	132	154	168	225
Total	2,148	2,680	2,844	3,100	3,237
Sewage Treatment Plants (including interceptor sewers)	158	180	203	177	137

* Value of new construction, Source, Construction and Building Materials, Statistical Supplement, (U. S. Department of Commerce,) May 1952.

The importance of safeguarding the source of much of the Nation's drinking water supply, its industrial water and the water it needs for agriculture, recreation, fish, and wildlife is obvious. Yet, on the whole, the record of pollution abatement works construction, as compared with other municipal public works and utility construction, has been consistently low.

The principal reason for this is that the treatment of wastes does not appear to benefit the community creating the wastes as directly as other public projects such as roads, schools and water supply; the fouled water flows away from the community, doing its chief damage to downstream communities, farms and property owners. A further difficulty is that waste treatment is not in most instances a profitable financial venture. Experience indicates, however, that when the facts about pollution are well presented and understood, public interest generally runs high and demands that treatment works be constructed.

The basic data upon which this report is based were obtained from:

(a) F. W. Dodge Corporation daily reports on sewage treatment plant and interceptor sewer contract awards in 37 eastern States.

(b) Construction news periodicals, such as the Daily Pacific Builder, Daily Journal (Denver), Rocky Mountain Contractor, Construction News Bulletin, Southwest Builder and Contractor.

The data from these sources are checked with information at the Building Materials Division, National Production Authority, U. S. Department of Commerce.

A list of projects for each State is then compiled and sent to the State water pollution control authority for examination, correction and return.

APPENDIX

SEWAGE TREATMENT PLANT CONSTRUCTION CONTRACTS AWARDED DURING THE YEAR 1952

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
Alabama		
Enterprise	New Plant	$119,000
Jonesboro	New Plant	196,328
Marion	New Plant	54,500
Tuskegee	New Plant	143,463
Arizona		
Bisbee	New Plant	30,000
Arkansas		
Bradford	New Plant	20,000
Fordyce	New Plant	235,000
Gurdon	New Plant	73,181
Hazen	New Plant	87,000
Nettleton	New Plant	32,000
Star City	New Plant	50,288
Stuttgart	New Plant	200,000
Tayler	New Plant	18,000
Tuckerman	New Plant	206,120
West Camden Housing	New Plant	10,000
California		
Angel's Camp	New Plant	161,120
Arbuckle	New Plant	165,116
Bakersfield	Improvement	18,055
Barstow	New Plant	110,995
Camp Beale	Improvement	34,000
Delano	Additions	64,395
East Cliff Sanitary District	New Plant	160,919
El Cajon	New Plant	360,975
El Toro	Additions	43,970
Exeter	Additions	53,370
Folsom	New Plant	131,958
Fort Ord	Additions	11,184
Greenfield	New Plant	51,411
Hayward	New Plant	920,443
	Interceptor	810,897
Inyokern	Enlargement	49,327
Kern County	New Plant	31,060
Lindsay	Replacement	32,690
Live Oak	New Plant	63,400
Los Angeles		
Hyperion Plant	Improvement	9,895
Magnolia Intercepter	Interceptor	182,531
Newhall Rehabilitation Center	New Plant	144,183
Sunland-Tujunga Interceptor	Interceptor (Additions)	288,517
Vineland & Sunland Interceptor	Interceptor	236,912
Wayside Honor Rancho	Additions	$41,863
Winnetka Avenue Interceptor	Interceptor	185,899
Martinez	New Plant	14,900
Marysville	Improvement	51,334
Menlo Park	Interceptor	191,471
Merced County	New Plant	34,396
Millbrae	New Plant	300,000
Mountain View	Enlargement	87,698
Napa Housing Authority	New Plant	43,935
Newman	New Plant	26,612
Oakland	Enlargement	9,001
	Interceptor	59,184
Oceanside		
Eleventh Naval Dist., Camp Pendleton	New Plant	189,254
Orange County Sanitation District	Outfall	2,047,809
Pacific Grove	New Plant	218,810
Pittsburg	New Plant	401,431
Palmdale	New Plant	141,718
Redwood City	New Plant	397,000
Sacramento	New Plant	3,598,000
Salida	New Plant	185,112
San Bernardino	Interceptor	19,496
San Diego	Addition	36,455
San Fernando 51st Dist. Agric. Assoc.	New Plant	4,894
San Francisco Naval Shipyard	New Plant	23,556
San Luis Obispo	Enlargement	87,368
Santa Barbara County	Improvement	3,440
Sausalito	New Plant	621,455
Springfield T.B. Hospital	New Plant	108,800
Stockton	Addition	162,370
Turlock	Enlargement	111,944
Colorado		
Aurora	New Plant	401,580
Baker Metropolitan Water & Sanitation Dist.	New Plant	29,875
Colorado Springs	Interceptor	323,862
	Addition	129,749
Englewood	New Plant	725,000
Grand County, Big Thompson Project	New Plant	14,673
Holyoke	New Plant	80,000
Jefferson County	New Plant	90,874

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STATE AND PLACE	TYPE OF CONSTRUCTION	COST
Colorado (Cont'd)		
Lyons Sanitation District	New Plant	$35,314
New Castle	New Plant	24,818
Connecticut		
Bethany	Addition	3,325
East Hartford	New Plant	864,000
Naugatuck	New Plant	467,219
New Haven, East Shore Sewage Treatment Plant	Addition	113,745
Stratford	New Plant	629,000
Torrington	Improvement	10,600
Winchester and Winsted	New Plant	221,000
Delaware		
New Castle County	Interceptor	363,785
Wilmington	Addition	2,781,800
District of Columbia	Addition	95,368
Florida		
Apopka City	New Plant	55,600
Camp Blanding	Enlargement	150,000
Dade City	New Plant	200,000
Eustis	New Plant	153,925
Green Cove Springs, Magnolia Springs Navy Project	New Plant	2,900,000
Jackson County	Improvement	40,000
Jacksonville, Floradale Subdivision	New Plant	8,700
Key West	New Plant	39,000
Lakeland	Addition	112,757
McDill Air Force Base	New Plant	80,000
Madeira Beach	New Plant	413,200
Madison	Enlargement	641,000
Melbourne	New Plant	400,000
Santa Rosa Island	New Plant	--
Tampa	New Plant	175,000
		16,000
Georgia		
Albany	New Plant	516,000
Blakely	New Plant	30,000
Douglas	New Plant	325,000
Ft. Valley	New Plant	241,250
Griffin	Enlargement	595,833
Hinesville	New Plant	
Ringgold	New Plant	34,000
Sylvester	New Plant	69,133

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
Idaho		
Grangeville	Replacement	$110,069
Paul	New Plant	50,000
Illinois		
Arlington Heights	Enlargement	595,950
Chicago, Northside Sewage Treatment Works	Addition	102,700
Upper DesPlaines	Interceptor	1,796,950
Crystal Lake	Addition	200,000
East Dubuque	New Plant	50,000
Genoa	Replacement	150,092
Highwood	Enlargement	3,048
Jacksonville	Addition	114,000
Joppa	New Plant	60,000
Lake Zurich	New Plant	152,885
Lincoln	Addition	40,000
Manteno	Addition	103,816
Mt. Vernon	Enlargement	428,900
Nokomis	New Plant	184,410
O'Fallon	Addition	30,000
Olney	Improvement	148,107
Sesser	Addition	101,900
Springfield Sanatorium	New Plant	30,000
Stickney, West Southwest Sewage Treatment Works, Sanitary Dist.of Chicago	Enlargement	297,795
Urbana and Champaign	Enlargement	19,800
Vandalia	New Plant	187,580
Wauconda	Enlargement	129,716
Woodstock	Addition	241,700
Indiana		
Culver	New Plant	136,000
Ft. Branch	New Plant	300,000
Hammond	Enlargement	305,567
	Interceptor	306,433
Indianapolis	Interceptor	3,389,350
	Addition	616,497
Division III	Addition	3,137,054
Kneipp Springs	New Plant	32,900
Kokomo	Improvement	21,000
Marion County	New Plant	78,800
Plainfield	New Plant	263,780
Iowa		
Cedar Falls	Enlargement	217,045
Glenwood State Hospital	New Plant	129,000

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
Iowa (Cont'd)		
Indianola	New Plant	$231,044
	Interceptor	22,491
Manson	Addition	1,990
North English	Replacement	115,992
Rock Rapids	New Plant	199,000
Spencer	Enlargement	141,133
Kansas		
Chanute	New Plant	314,915
Council Grove	Addition	75,000
Derby	New Plant	--
Elk City	New Plant	98,794
Ft. Riley	Improvement	56,640
Garden Plain	New Plant	
Goodland	New Plant	78,529
Johnson County	Addition	343,000
Lyons	New Plant	223,595
Norwich	New Plant	--
Olathe	Addition	100,000
South Haven	New Plant	112,381
Topeka	Enlargement	200,000
Viola	New Plant	--
Wellington	Improvement	90,000
Kentucky		
Barbourville	New Plant	96,164
Fern Creek, Fern Creek High Schl.	New Plant	46,590
Ft. Campbell	Improvement	5,097
Hardinsburg	Enlargement	72,130
Lexington, PHS Narcotic Farm	Enlargement	229,760
Northern Kentucky Sanitation Dist.	New Plant	7,000,000
Somerset	Improvement	181,679
Valley Station	New Plant	45,390
Louisiana		
Mamou	New Plant	173,347
Napoleonville	New Plant	182,864
Sulphur (Calcasieu Parish)	New Plant	800,000
Maine-none reported		
Maryland		
Baltimore County	New Plant	70,000
Breathedsville, Maryland Reform. for Males	New Plant	90,275
Camp Ritchie	New Plant	177,000
Piney Point	New Plant	38,690
Sandy Point, Dept. of Forests & Parks	New Plant	29,194
St. Micheals	New Plant	$225,000
Massachusetts		
Charles River	Interceptor	1,990,000
Fall River	Interceptor	728,927
Hyannis	Improvement	3,200
Lexington	Interceptor	550,000
Manchester	New Plant	6,468
North Metropolitan	Interceptor	6,200,000
Pittsfield Airport	New Plant	5,000
Shrewsbury	Improvement	9,933
South Metropolitan Sewage Works, Nut Island	New Plant	250,000
Springfield	Interceptor	300,000
Stockbridge	Improvement	5,500
Michigan		
Beulah	New Plant	50,000
Charlotte	Addition	267,900
Clare	New Plant	109,160
Clinton Township	New Plant	206,000
Coopersville	Enlargement	35,312
Dearborn Township	New Plant	20,000
East Tawas	Interceptor	10,000
Elk Rapids	New Plant & Interceptor	134,000
Kinross, Kinross Air Base	New Plant	100,000
Lansing	Enlargement	222,600
Marquette	New Plant	891,007
Marysville	New Plant	38,064
Monroe	New Plant	50,000
Muskegon Heights	Addition	93,459
Negaunee	New Plant	370,987
New Buffalo	New Plant	111,363
Pontiac	Enlargement	737,473
St. Johns	New Plant	42,500
Sterling Township	New Plant	—
Tecumseh	New Plant	150,000
Wayne County, Romulus Township	Enlargement	211,284
Willow Run	Enlargement	37,165
Minnesota		
Alexandria	Enlargement	78,656
Belview	New Plant	62,808
Canby	Replacement	141,406
Comfrey	New Plant	103,486
Cromwell	New Plant	17,550
Echo	New Plant	58,000
Ely	New Plant	400,000
Garden City	New Plant	8,690
Glen Lake	New Plant	7,796
Holland	New Plant	30,906
Kensington	New Plant	50,000

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
Minnesota (Cont'd)		
Lake Crystal	New Plant	$120,650
Lake Henry	New Plant	20,000
Mapleview	Interceptor	10,000
Milton a	New Plant	56,623
Waseca	New Plant	342,740
Mississippi		
Biloxi, Keesler Air Force Base	New Plant	376,844
Gulfport (Tech. Training Air Force Base)	New Plant	49,900
Hollandale	New Plant	90,547
Louisville	New Plant	117,544
Lucedale	New Plant	48,090
Whitfield, Miss. State Hospital	New Plant	168,000
Missouri		
Cameron	New Plant	104,824
Fordland	Enlargement	20,754
Independence	New Plant	902,268
Kirkwood	Addition	23,066
Maryville	New Plant	300,000
Overland	Improvement	8,593
Montana		
Billings	New Plant	30,000
Hamilton	New Plant	127,885
Joliet	New Plant	12,000
Polson	New Plant	20,000
Nebraska		
Cedar Bluffs	New Plant	34,000
Elwood	New Plant	65,000
Fairfield	New Plant	34,000
Lincoln	Enlargement	400,000
Overton	New Plant	50,000
Oxford	Addition	57,895
Springfield	New Plant	40,000
Stapleton	New Plant	26,000
Yutan	New Plant	40,000
Nevada		
Reno	New Plant	44,000
New Hampshire		
Carroll	New Plant	12,000
Lakeport	New Plant	--
Meredith	New Plant	147,400

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
New Jersey		
Bayonne	Interceptor & treatment plant	$8,836,731
Bernardsville	Addition	1,768
Denville Township	New Plant	2,901
Edgewater	New Plant	450,000
Egg Harbor City	Improvement	178,807
Elizabeth	Interceptor	1,349,086
Fairlawn, Radburn Sewage Disposal Plant	Enlargement	148,913
Haddon Township	Addition	124,824
Haddonfield	New Plant	150,000
Livingston	New Plant	70,000
Madison and Chatham	Improvement	11,000
Manasquan	Improvement	56,430
Matawan	New Plant	62,732
Moorestown	Improvement	10,439
	Addition	208,895
Neptune City	Addition	42,564
Paramus	New Plant	112,803
Stelton	Addition	15,952
West New York	New Plant	1,241,877
West Paterson	Addition	8,300
New Mexico		
Gallup	Addition	90,000
Kirkland County, San Juan Plant of El Paso Natural Gas Co.	New Plant	2,500
Rio Arriba County, Erkan Camp	New Plant	2,000
Socorro, State T.B.Sanatorium	New Plant	18,000
New York		
Auburn	Enlargement	41,389
Bath, Veterans' Admin.Center	New Plant	159,449
Brockport	Enlargement	64,213
Brooklyn, Coney Island Plant	Improvement	4,710
Buffalo	Enlargement	1,540,266
Cayuga	New Plant	3,752
Colonie	Improvement	54,790
Depew	New Plant	378,672
Hamburg	Addition	287,500
Herkimer and Montgomery County	New Plant	2,550
New Rochelle	New Plant	2,177,226
	Outfall Sewer	1,100,000
New York City	Improvement	10,900

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
New York (Cont'd)		
New York City, Bowery Bay Treatment Works	Improvement	$3,740
Canal Street Plant	Addition	7,768
Wards Island Plant	Improvement	4,000
North Collins	New Plant	4,275
Patchogue	Improvement	5,193
Peekskill	New Plant	598,764
Rome Air Force Base	New Plant	1,957,700
North Carolina		
Albemarle	Addition	305,051
Charlotte	Enlargement	1,536,940
Durham	Improvement	399,729
Forest City	New Plant	21,100
Randolph County, Randleman Schl.	New Plant	14,000
North Dakota		
Flaxton	New Plant	7,000
Larimore	Replacement	29,393
Max	New Plant	6,000
Streeter	New Plant	13,700
Ohio		
Alliance	Enlargement	124,651
Ashland County	New Plant	5,105
Athens	New Plant	681,195
Bath Township School	Improvements	15,350
Bluffton	New Plant	501,831
Cambridge	New Plant	95,135
Chillicothe, V.A. Hosp. & Fed. Reformatory	New Plant	346,900
Cleveland, Southerly Plant at East 49th St. & Canal Rd.	Enlargement	2,127,060
Green Camp	New Plant	—
Jackson	New Plant	460,000
Lockbourne Air Force Base	New Plant	318,669
Lorain	Interceptor	149,411
	New Plant	697,294
Louisville	New Plant	120,000
Loveland	New Plant	492,854
Manchester, East Franklin Schl. District	New Plant	18,875
Marion	Enlargement	641,950
McKean Township	New Plant	4,927
Mentor	New Plant	—
Miami County	New Plant	937,640

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
Ohio (Cont'd)		
Rittman	New Plant	$97,700
Stockdale, School	New Plant	—
Troy	Interceptor	325,482
Wellston	Improvement	80,000
Windham, Maple Grove Housing Development	New Plant	--
Oklahoma		
Bartlesville, Jane Phillips Memorial Hosp.	New Plant	12,000
Commerce	Replacement	66,700
Edmond	Replacement	111,000
Enid	New Plant	925,656
Heavener	New Plant	86,000
Holdenville, North Plant	Enlargement	140,000
Southside Plant	Improvement	--
Newkirk	New Plant	20,089
Okmulgee	New Plant	449,080
Owasso	New Plant	19,100
Quay, Quay Public School	New Plant	2,000
Shawnee	New Plant	210,620
Talihina	New Plant	39,521
Weleetka	New Plant	53,672
Oregon		
Albany	New Plant and Interceptor	680,315
Athena	Improvement	27,691
Carlton	Enlargement	19,172
Corvallis	Interceptor and Outfall	60,955
	New Plant	304,000
Cottage Grove	New Plant	149,130
Eugene	New Plant	735,320
Gold Hill	Addition	942
Heppner	New Plant	84,190
Klamath Falls	Addition	6,100
McMinnville	New Plant	254,831
Oregon City	Interceptor	193,000
	New Equipment	36,399
	New Plant	142,294
Pendleton	Addition	199,100
Portland, Burlingham Interceptor	Interceptor	48,924
	Interceptor	236,000
Riddle	New Plant	18,765
Sandy	New Plant	46,816
Woodburn, [illegible] Boys' Reform.	New Plant and Interceptor	124,633
	New Plant	37,473

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
Pennsylvania		
Allentown	New Plant	$107,000
Bedford	New Plant	153,340
Bethlehem	Improvement	26,020
Bristol	Enlargement	464,614
Buckingham	New Plant	5,000
Catawissa	New Plant and Interceptor	107,985
Columbia	New Plant	505,376
Conshohocken	Addition	471,150
Danville	New Plant	389,752
Everett	New Plant	124,853
Fairless Hills	New Plant	919,189
Gratersford, Eastern State Penitentiary	New Plant	166,683
Hershey	Addition	250,000
Lock Haven	Interceptor	266,740
Mayview, State Hospital	New Plant	437,600
McSherrystown	Enlargement	23,273
Morrisville	New Plant	741,938
Muckinipates Authority	New Plant	1,348,088
Pen Argyl	New Plant	20,000
Philadelphia, Cobbs Creek Parkway-Grace Avenue	Interceptor	875,010
Oregon Ave. Interceptor	Interceptor	--
Southwest Sewage Disp. Plant	New Plant	705,101
Pleasureville, Elem. School	New Plant	4,196
Reading, Berks County Home	New Plant	98,749
Shippensburg	New Plant	348,841
Shirewanstown	New Plant	219,300
South Frankstown Sewer Dist.	Addition	436,981
Tyrone	New Plant	608,846
Union City	Addition	100,000
Uniontown	Addition	72,900
York	Addition	4,047,397
Rhode Island - none reported		
South Carolina		
Charleston Airfield	New Plant	--
Donaldson Air Force Base	Addition	137,740
Union County	2 New Plants	265,789

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
South Dakota		
Dupree	New Plant	$69,800
Hosmer	New Plant	18,000
Madison	New Plant	35,410
Rapid City	Addition	178,950
Rescoe	New Plant	20, 0
Sioux Falls	Enlargement	--
Stickney	New Plant	60,000
Weaver, Rapid City Air Force Base	New Plant	173,600
Tennessee		
Cleveland	New Plant	650,000
Cookville	New Plant	515,824
Lewisburg	Enlargement	358,965
Texas		
Alvin	Enlargement	76,725
Amarillo	Interceptor	336,719 19,439
Aspermont	New Plant	18,812
Bellville	Additions	45,000
Brookshire	New Plant	84,477
Brownsville	New Plant	294,800
Calvert	Replacement	31,086
Canyon	New Plant	105,376
Cleburne	Additions	12,000
Corpus Christi	Enlargement	234,868
DeKalb	Replacement	43,000
Galena Park #1	Addition	141,965
#2	New Plant	58,371
Garland	New Plant	376,000
Giddings	New Plant	24,670
Glen Rose	Enlargement	30,000
Gregg County	New Plant	126,607
Halton City	New Plant	220,000
Harris County, Water Control & Improvement Dist.	New Plant	39,882
Haskill	Replacement	44,058
Houston	Addition	23,000
Hurst	New Plant	32,000
Irving	Enlargement	117,767
LaGrange	New Plant	66,990
Lamarque	Addition	211,000
Laredo Municipal Airport	New Plant	263,205
Lexington	New Plant	17,899
Linden	New Plant	28,181
Lubbock	Enlargement	122,776
Mansfield	Replacement	18,425
Mesquite	New Plant	75,423
Mount Pleasant	Additions	54,000
Munday	Enlargement	18,000
Navasota	New Plant	63,500
Overton	Additions	2,000
Paris	Interceptor	253,890
Reese Air Force Base	Additions	41,750

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
Texas (Cont'd)		
Savoy	New Plant	$12,000
Seadrift	Additions	10,036
Seymour	New Plant	84,500
Sinton	New Plant	119,950
South Houston	New Plant	123,634
South Side Place (Houston)	Additions	6,742
Taft	New Plant	104,000
Tomball	New Plant	37,000
Weslaco	Replacement	158,507
Whitesboro	Improvement	31,029
Utah		
American Fork	New Plant	160,000
Vermont		
Burlington	New Plant	505,500
Virginia		
Beaumont, Industrial Schl. for Boys	New Plant	25,974
Covington (Boys' Home)	New Plant	20,000
Fairfax	Replacement	228,000
Fort Eustis	New Plant	257,900
Pearisburg	New Plant	50,335
Washington		
Bellevue	New Plant	179,962
Bryn Mawr	New Plant	166,192
Everett	Outfall	18,117
Kettle Falls	New Plant	72,500
McCleary	New Plant	93,179
Olympia, Dept. of Public Institutions at Steilacoom	New Plant	92,472
Medical Lake, Lakeland Village	New Plant	150,629
Seattle	Interceptor	99,756
Waitsburg	New Plant	63,979
Walla Walla	Improvement	64,230
West Virginia		
Weirton	New Plant	130,000
Wisconsin		
Ashland	New Plant	805,213
Barron	Replacement	245,920
Biron	New Plant	90,000

STATE AND PLACE	TYPE OF CONSTRUCTION	COST
Wisconsin (Cont'd)		
Blanchardville,	New Plant	$78,000
	Interceptor	31,000
Cameron	New Plant	236,452
Chippewa Falls, Chippewa County Hospital	New Plant	46,428
Darlington	New Plant	158,582
Green Bay	Addition	250,000
Hartland	Improvement	4,591
Keshena and Neopit	New Plant	125,000
La Crosse	Enlargement	554,000
Lake Mills	Improvement	14,300
Lancaster, Grant County Hosp. & Home	New Plant	37,900
Markesan	Addition	--
Marshall	New Plant	85,000
Mauston	Interceptor	46,000
Montreal	New Plant	138,572
Mosinee	New Plant	59,238
New London	Interceptor	182,450
Oconto	New Plant	617,000
Osceola Air Force Base	New Plant	26,622
Rice Lake	New Plant	508,000
Ripon	New Plant	183,029
Seymour	Enlargement	12,620
South Milwaukee	Enlargement	228,700
Statesan	New Plant	65,000
Strum	New Plant	50,000
Three Lakes	New Plant	38,786
Waterloo	New Plant	146,764
Whiting	New Plant	12,630
Wyoming		
Cheyenne	Improvement	14,620
Thermopolis, Hot Springs State Park	New Plant	38,199

Totals for U. S.	314 New Plants	
	201 Other	
	515 Total	$137,208,699